



Aerial Apparatus Operations

Course Plan

Course Details

Certification:	Fire Apparatus Driver/Operator – Aerial Apparatus
CTS Guide:	Fire Apparatus Driver/Operator – Aerial Apparatus (August 2015)
Description:	This course provides information on aerial apparatus preventive maintenance and operations. Topics include routine tests, inspections, and servicing functions on the systems and components unique to an aerial apparatus; maneuvering, positioning, and stabilizing an aerial apparatus; maneuvering, positioning, and lowering the aerial device; and deploying and operating an elevated master stream. This course is based on the 2014 edition of <i>NFPA 1002 Standard for Fire Apparatus Driver/Operator Professional Qualifications</i> .
Designed For:	Career and volunteer fire service personnel who drive and operate a fire department aerial apparatus
Prerequisites:	Successfully completed OSFM Fire Fighter I training Fire Apparatus Driver/Operator 1A (2008 or 2015 version) Hold a valid Class C Firefighter Endorsed driver's license (minimum) Completed a minimum of four (4) hours driving an aerial apparatus Completed the activities from Driver/Operator 1A while driving an aerial apparatus
Standard:	Complete all activities and skills Complete the summative test with a minimum score of 80%
Hours:	Lecture: 21:00 Activities: 1:00 Skills: 17:00 Testing: 1:00
Hours (Total):	40:00
Maximum Class Size:	30

Aerial Apparatus Operations

Instructor Level: This course requires one (1) primary instructor and sufficient assistant instructors to meet the skills ratio

Instructor/Student Ratio: Lecture: 1:30 Skills: 1:10

Restrictions: Sufficient fire apparatus and adequate space to accommodate the students in the class and the required skills

SFT Designation: CFSTES

Required Resources

Instructor Resources

To teach this course, instructors need:

- *Fire Apparatus Driver/Operator*, Second Edition, Jones & Bartlett, ISBN: 9781284026917
or
Pumping and Aerial Apparatus Driver/Operator Handbook, Third Edition, IFSTA, ISBN: 9780879395711
- Maintenance and inspection forms
- Manufacturer's specifications and requirements

Online Instructor Resources

The following instructor resources are available online at

<http://osfm.fire.ca.gov/training/SFTCurriculum>:

- Aerial Apparatus Operations required activities

Student Resources

To participate in this course, students need:

- *Fire Apparatus Driver/Operator*, Second Edition, Jones & Bartlett, ISBN: 9781284026917
or
Pumping and Aerial Apparatus Driver/Operator Handbook, Third Edition, IFSTA, ISBN: 9780879395711
- Personal protective clothing

Facilities, Equipment, and Personnel

The following facilities, equipment, or personnel are required to deliver this course:

- Standard learning environment or facility
- Writing board or paper conference pads
- Markers, erasers
- Computer or tablet with presentation or other viewing software
- Amplification devices
- Projector and screen

Aerial Apparatus Operations

- Sufficient aerial apparatus to accommodate the number of students in the class
- Qualified assistant (as needed)
- Tools and equipment for inspection and testing
- Personal protective clothing
- Pressurized water source
- Facility and/or location with space sufficient to accommodate maneuvering the apparatus and deploying the aerial, stabilizing the apparatus and transferring power, maneuvering, stabilizing, and lowering the aerial device, deploy and operate an elevated master stream

Unit 1: Introduction

Topic 1-1: Orientation and Administration

Terminal Learning Objective

At the end of this topic, a student will be able to identify facility and classroom requirements and identify course objectives, events, requirements, assignments, activities, resources, evaluation methods, and participation requirements in the course syllabus.

Enabling Learning Objectives

1. Identify facility requirements
 - Restroom locations
 - Food locations
 - Smoking locations
 - Emergency procedures
2. Identify classroom requirements
 - Start and end times
 - Breaks
 - Electronic device policies
 - Special needs and accommodations
 - Other requirements as applicable
3. Review course syllabus
 - Course objectives
 - Calendar of events
 - Course requirements
 - Student evaluation process
 - Assignments
 - Activities
 - Required student resources
 - Class participation requirements

Discussion Questions

1. What is a formative test? What is a summative test?

Activities

1. To be determined by the instructor.

Topic 1-2: Fire Apparatus Driver/Operator – Aerial Apparatus Certification Process

Terminal Learning Objective

At the end of this topic, a student will be able to identify the courses and requirements for the Fire Apparatus Driver/Operator – Aerial Apparatus certification, and be able to describe the certification task book and testing process.

Aerial Apparatus Operations

Enabling Learning Objectives

1. Identify the courses required for Fire Apparatus Driver/Operator – Aerial Apparatus certification
 - Fire Apparatus Driver/Operator 1A
 - Aerial Apparatus 1
2. Identify any other requirements for Fire Apparatus Driver/Operator – Aerial Apparatus certification
 - OSFM certified Fire Fighter I
 - Experience [one (1) of the following two (2) options]
 - Option 1: Have a minimum of one (1) year full-time, paid experience in a California fire department with the primary responsibility as an aerial apparatus driver/operator
 - Option 2: Have a minimum of two (2) years volunteer or part-time, paid experience in a California fire department with the primary responsibility as an aerial apparatus driver/operator
 - Be appointed to the rank or position of Fire Apparatus Driver/Operator
 - Performing in an acting capacity does not qualify
3. Describe the certification task book process
 - Complete all prerequisites and course work
 - Submit application and fees to request certification task book
 - Complete all job performance requirements included in the task book
 - Must have identified evaluator verify individual task completion via signature
 - Must have Fire Chief or authorized representative verify task book completion via signature
 - Must be employed by a California Fire Agency in the position prior to submitting completed task book to State Fire Training
4. Describe the certification testing process
 - Complete course work
 - Schedule online certification test
 - Schedule skills evaluation test

Discussion Questions

1. How many courses are there in the Fire Apparatus Driver/Operator - Aerial Apparatus certification track? What are they?

Activities

1. To be determined by the instructor.

Unit 2: Preventive Maintenance

Topic 2-1: Perform and Document Routine Tests, Inspections, and Servicing Functions Unique to Aerial Apparatus

Terminal Learning Objective

At the end of this topic, a student, given an aerial apparatus, tools and equipment, maintenance and inspection forms, manufacturer's specifications and requirements, and policies and procedures of the jurisdiction, will be able to perform and document routine tests, inspections, and servicing functions on the systems and components unique to an aerial apparatus to verify their operational status.

Enabling Learning Objectives

1. Recognize manufacturer specifications and requirements
2. Review policies and procedures of the jurisdiction, including documentation requirements
3. Describe aerial apparatus systems and components
 - Aerial device electrical systems
 - Aerial device hydraulic systems
 - Aerial device safety systems
 - Aerial ladder
 - Aerial waterway
 - Breathing air systems
 - Cable systems (if applicable)
 - Communication systems
 - Slides and rollers
 - Stabilizing systems
4. Use tools and equipment
5. Inspect aerial apparatus and components
6. Recognize system problems and out-of-service criteria
7. Correct any deficiency noted according to policies and procedures and/or manufacturer specifications and requirements

Discussion Questions

1. How often is maintenance performed?
2. What will cause your aerial device to become out of service?
3. How often is your aerial ladder recertified? By whom?

Activities

1. Divide students into small groups. Have each group perform an aerial apparatus inspection using a form provided by the instructor and present their findings.

CTS Guide Reference: CTS 1-1

Unit 3: Operations

Topic 3-1: Maneuver and Position an Aerial Apparatus

Terminal Learning Objective

At the end of this topic, a student, given an aerial apparatus, incident location, situation description, and assignment will be able to maneuver and position an aerial apparatus for correct aerial device deployment.

Enabling Learning Objectives

1. Describe uses for an aerial device
2. Explain capabilities and limitations of aerial devices
 - Reach
 - Tip load
 - Angle of inclination
 - Angle from chassis axis
3. Discuss the effects of topography, ground, and weather conditions on deployment
4. Discuss options for the placement of an aerial apparatus
5. Determine load limit of the aerial device
6. Determine a correct position for the apparatus
7. Maneuver the apparatus into the correct position
8. Avoid obstacles to operations

Discussion Questions

1. How much space do you need for your stabilizer deployment?
2. How should an aerial apparatus be placed at a/an _____ incident?
3. What is the maximum degree of slope allowable to maintain full aerial capabilities?
4. Can you operate below grade? If yes, how far?

Activities

1. Activity 3-1-1: Maneuver and Position an Aerial Apparatus

CTS Guide Reference: CTS 2-1

Topic 3-2: Stabilize an Aerial Apparatus

Terminal Learning Objective

At the end of this topic, a student, given a positioned aerial apparatus and manufacturer's specifications and requirements, will be able to stabilize an aerial apparatus and transfer power to the aerial device hydraulic system in order to deploy the aerial device.

Enabling Learning Objectives

1. Describe aerial apparatus hydraulic systems
2. Explain manufacturer's specifications and requirements for stabilization
 - A-frame
 - H configuration
 - Torque box
3. Discuss the reasons for short-jacking and its limitations

Aerial Apparatus Operations

4. Discuss the effects of topography and ground conditions on stabilization
5. Transfer power from the aerial apparatus engine to the hydraulic system
6. Operate aerial apparatus stabilization devices

Discussion Questions

1. What should you consider when placing your stabilizers?
2. What is short-jacking? When is it used?
3. Where do you place your chock blocks?
4. Do you need to raise the tires off the ground for proper stabilization?

Activities

1. Activity 3-2-1: Stabilize an Aerial Apparatus

CTS Guide Reference: CTS 2-2

Topic 3-3: Maneuver and Position an Aerial Device from Each Control Station

Terminal Learning Objective

At the end of this topic, a student, given a stabilized aerial apparatus, incident location, situation description, and an assignment, will be able to maneuver and position the aerial device from each control station to accomplish the assignment.

Enabling Learning Objectives

1. Explain aerial device hydraulic systems
2. Explain hydraulic pressure relief systems
3. Identify gauges and controls
4. Describe cable systems
5. Discuss communications systems
6. Explain electrical systems
7. Explain locking systems
 - Cable dog locks
 - Holding valves
8. Discuss platform stabilization
9. Explain aerial device safety systems
10. Explain system overrides and the hazards of using overrides
11. Explain safe operational limitations of the given aerial device
12. Explain safety procedures specific to the device
13. Discuss operations near electrical hazards and overhead obstructions
14. Raise, rotate, extend, position to a specified location and lock
15. Unlock, retract, rotate, lower, and bed the aerial device

Discussion Questions

1. When do you use your overrides in a nonemergency situation?
2. What is your jurisdiction's policy for operating near power lines?
3. How do you decrease ladder fatigue and damage when operating the aerial?
4. What hazards are associated with a supported aerial?
5. Can you operate multiple levers at the same time?
6. What is the closed or retracted measurement of your aerial?

Aerial Apparatus Operations

7. What ladder position offers the most stability? Why?
8. If there is a hydraulic failure, what holds the ladder in position?

Activities

1. Activity 3-3-1: Maneuver and Position an Aerial Device from Each Control Station

CTS Guide Reference: CTS 2-3

Topic 3-4: Lower an Aerial Device using the Emergency Operating System

Terminal Learning Objective

At the end of this topic, a student, given a deployed aerial device, will be able to lower an aerial device using the emergency operating system to its bedded position.

Enabling Learning Objectives

1. Describe emergency operating systems
2. Explain manual rotation and lowering systems
3. Explain system overrides and the hazards of using overrides
4. Explain safety procedures specific to manual overrides
5. Unlock, retract, rotate, lower, and bed the aerial device using the emergency operating system

Discussion Questions

1. Who is responsible when you use the emergency system overrides?
2. In which situations are the manual overrides used?
3. Which sensors are disabled in override mode?
4. What is an EPU, where is it, and what is its maximum running time?

Activities

1. Activity 3-4-1: Lower an Aerial Device using the Emergency Operating System

CTS Guide Reference: CTS 2-4

Topic 3-5: Deploy and Operate an Elevated Master Stream

Terminal Learning Objective

At the end of this topic, a student, given a stabilized aerial device, pumping apparatus, pressurized water source, master stream device, and a desired flow, will be able to deploy and operate an elevated master stream so the stream is effective and the aerial and master stream devices are operated correctly.

Enabling Learning Objectives

1. Discuss the types of elevated master stream devices and waterways
2. Discuss operating master stream devices
 - Manually
 - Remotely
3. Explain nozzle reaction
4. Explain range of operation
5. Describe waterway locking systems
6. Discuss weight limitations
7. Connect a water supply to a master stream device

Aerial Apparatus Operations

8. Control an elevated nozzle manually or remotely

Discussion Questions

1. What is the maximum lateral movement of the stream?
2. What is the sequence to start and stop the flow of water from the nozzle?
3. What are your limitations for water tower operations?
4. Do you wear a ladder belt when operating at the tip of a master stream?

Activities

1. Activity 3-5-1: Deploy and Operate an Elevated Master Stream Activity

CTS Guide Reference: CTS 2-5

Aerial Apparatus Operations

Time Table

Segment	Lecture Time	Activity/Skills Time	Total Unit Time
Unit 1: Introduction			
Topic 1-1: Orientation and Administration			
Lecture	0:30		
To be determined by the instructor		0:00	
Topic 1-2: Aerial Apparatus Certification Process			
Lecture	0:30		
To be determined by the instructor		0:00	
Unit 1 Totals	1:00	0:00	1:00
Unit 2: Preventive Maintenance			
Topic 2-1: Perform Routine Tests, Inspections, and Servicing Functions Unique to Aerial Apparatus			
Lecture	6:00		
Recommended by State Fire Training		1:00	
Unit 2 Totals	6:00	1:00	7:00
Unit 3: Operations			
Topic 3-1: Maneuver and Position an Aerial Apparatus			
Lecture	4:00		
Activity 3-1-1: Maneuver and Position an Aerial Apparatus		*	
Topic 3-2: Stabilize an Aerial Apparatus			
Lecture	1:30		
Activity 3-2-1: Stabilize an Aerial Apparatus		*	
Topic 3-3: Maneuver and Position an Aerial Device from Each Control Station			
Lecture	3:30		
Activity 3-3-1: Maneuver and Position an Aerial Device from Each Control Station		*	
Topic 3-4: Lower an Aerial Device using the Emergency Operating System			
Lecture	2:00		
Activity 3-4-1: Lower an Aerial Device using the Emergency Operating System		*	

Aerial Apparatus Operations

Segment	Lecture Time	Activity/Skills Time	Total Unit Time
Topic 3-5: Deploy and Operate an Elevated Master Stream			
Lecture	2:00		
Activity 3-5-1: Deploy and Operate an Elevated Master Stream		*	
Unit 3 Totals	14:00	17:00	31:00
Lecture, Activity, and Unit Totals:	21:00	18:00	39:00

Course Totals

Total Lecture Time (LT)	21:00
Total Activity Time (AT)	1:00
Total Skills Time (ST)	*17:00
Total Testing Time (TT)	1:00
Total Course Time	40:00

Note: Skills time will vary depending on the number of students in the program. It is important to remember that the suggested skill hours are for 30 students.